

REMARKS

Claims 1-5, 7-10 and 13-23 are pending in the application. Claims 1-5, 7-10 and 13-23 stand rejected by the Examiner. The drawings have been accepted. The Examiner's objections and rejections are addressed below in substantially the same order as in the office action.

REJECTIONS UNDER 35 USC § 102

Claims 1-4, 9, 13, 16, 17, 19 and 20 stand rejected under 35 U.S.C. as 102(b) as being anticipated by Bahel et al. (US 5,303,561).

With respect to claim 1, Applicant observes that claim 1 had been previously amended to recite that the speed control is performed “without varying a voltage applied to the blower motor...” Applicant has reviewed Bahel et al. and has found the below as the only reference to speed control:

Regarding the fan speed control, the blower control block 234 receives instructions from blower feedback detection block 236, pulse width modulation output control block 238 and blower ON/OFF delay block 240. The presently preferred indoor fan motor is driven by a pulse width modulation system by which the pulse width of the motor drive signal is varied to modulate the speed. The pulse width modulation output control block 238 and blower feedback detection block 236 provide the pulse width modulated closed-loop system function. (Col 9, lines 52-60)

Applicant has further clarified in claim 1 that the speed control uses a time delay circuit and a relay to control speed without varying the voltage. Clearly, as shown above, Bahel et al. does not show such an arrangement. Also, Applicant finds no suggestion in Bahel et al. for modifying the described arrangement to include such a speed control. The Espinosa circuitry varies voltage for speed control and thus does not anticipate claim 1. does vary vo is discussed below. Discussed in connection with claim 8 and 23 are the reasons why Bahel et al and Espinosa cannot be combined to arrive at the device claimed by claim 1. Accordingly, Applicant believes that claim 1 is in condition for allowance.

With respect to claim 2, as noted above, Bahel et al. uses pulse width modification to control fan speed. Bahel et al. does not use an adjustable time delay circuit in the speed control circuitry. Thus, claim 2 is in condition for allowance.

With respect to claim 3, Bahel et al. clearly describes its device as have a variable speed motor and operating the fan at an optimal speed to control humidity:

Referring to FIG. 10, after determining which mode the system is in Steps 256 through 259, a five minute timed loop is entered at Step 261 and 262. During this five minute interval the fan speed algorithm is performed. First, at Step 263, if the indoor temperature and outdoor temperature are less than 75.degree., the minimum fan speed is set at 60% as indicated at Step 265. Otherwise, the minimum fan speed is set at 70% as indicated at Step 264. Col 12, lines 19-27

From the foregoing, it will be seen that the present invention represents a significant departure from conventional refrigeration cycle control techniques. The microprocessor-based control system and digitally controlled humidity-responsive variable speed fan of the invention greatly improve steady state and cyclic performance and comfort, by optimizing the indoor fan speed in a controlled way. Energy is saved by allowing the system to operate at optimal efficiency even at below rated output and by allowing building occupants to feel comfortable at higher cooling temperature settings. Col 13, lines 9-22

Thus, Bahel et al. teaches a system wherein the first speed varies. In contrast, claim 4 recites a system wherein the first speed is substantially fixed. Thus, claim 3 is in condition for allowance.

With respect to claim 4, to Applicant's reading, Bahel et al. uses a "fan speed algorithm" to determine the timing of speed changes. Applicant has found no feature or element in Bahel et al. that resembles a time delay circuit that causes the blower motor to operate at the first speed for the delay period at the start of a cooling cycle. Thus, claim 4 is in condition for allowance.

With respect to claim 9, Bahel et al. does not teach a speed control that is interconnected with a preexisting furnace circuit board. Rather, Bahel et al. teaches quite the opposite because the described system "represents a significant departure from conventional refrigeration cycle control techniques." In contrast, Applicant in the specification has explained that the claimed speed control can be utilized in retrofitting existing cooling systems. Thus, claim 9 is in condition for allowance.

Claims 13 and 19 are allowable for the same reasons given for claim 1.

Claims 16 and 20 are allowable for the same reasons given for claim 3.

Claim 17 is allowable for the same reasons given for claim 2.

REJECTIONS UNDER 35 USC § 103

Claims 8 and 23 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bahel et al. (U.S. 4,757,694) in view of Espinosa. The Examiner contends that it would have been obvious to modify the apparatus of Bahel et al. with a time delay circuit and a single pole, double throw delay of Espinosa. Applicant respectfully submits however that Bahel et al clearly teaches against such a combination. The Bahel et al. devices uses pulse width modification to control fan speed. The Espinosa circuitry is used to vary voltage to the motor to control speed: "As it can be observed from FIG. 1, fan relay means 80 includes one-pole double throw switch means 82 that provide a selection of one of two voltages, V.sub.L and V.sub.H to variable speed fan member F." (Col. 3, lines 43-46). Furthermore, Bahel et al. describes a "digitally controlled humidity-responsive variable speed fan" that "optimiz[es] the indoor fan speed in a controlled way." The very limited speeds provided by Espinosa circuitry would materially harm the operation of the device of Bahel et al., which relies on pulse width modification speed control for optimal operation. Therefore, one skilled in the art would not make the suggested combination. Thus, Applicant submits that claims 8 and 23 are allowable.

Claims 5 and 15 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bahel et al. (U.S. 5,303,561). These claims depend from claims believed to be in condition for allowance and are allowable on at least those grounds.

Claims 18 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Bahel et al. (U.S. 5,303,561) in view of Hile (U.S. 4,389,853). These claims depend from claims believed to be in condition for allowance and are allowable on at least those grounds.

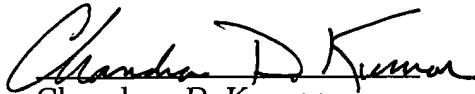
Claims 7, 10, 14, 18, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahel et al. (U.S. 5,303,561) in view of Obler (U.S. 4,210,278). These claims depend from claims believed to be in condition for allowance and are allowable on at least those grounds.

CONCLUSION

For all the foregoing reasons, Applicant submits that the application is in a condition for allowance. No fee is believed due for this paper. The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to Deposit Account No. **02-0429(CUR-1001-US)**.

Respectfully submitted,

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